

AMENDMENTS

Please amend the claims as follows:

1. (currently amended) A method for adapting signals from an ultrasound transducer for an ultrasound system, the method comprising:

(a) processing signals from a plurality, M, of elements within a transducer assembly having a transducer connector releasably connectable with the ultrasound system, the ultrasound system comprising a transmit beamformer, a receive beamformer, and a system connector in a system housing, the system housing comprising a cart-based housing resting on wheels, the system connector permanently connected through a transmit and receive switch to the transmit and receive beamformers; and

(b) converting the processed signals to a different form appropriate for the ultrasound system, the conversion being in the transducer assembly;

wherein (a) comprises processing signals for a given range from the plurality, M, of elements of a multi-dimensional array of the elements to a lesser plurality, N, of processed signals;

wherein (a) comprises processing within a transducer probe housing, the transducer probe housing being shaped for handheld use, and wherein (b) comprises converting within a connector housing releasable from the ultrasound system, the converting making signals, from the elements, in the connector housing compatible with the receive beamformer; wherein

further comprising connecting, with a cable, connecting the transducer probe housing with the connector housing, the connector housing at least partially enclosing the transducer connector, the transducer connector releasably connectable with the system connector; and transmitting the signals from the elements to the connector housing.

2. (original) The method of Claim 1 wherein (a) comprises partially beamforming signals for each of a plurality of sub-apertures.

3. (original) The method of Claim 2 wherein (a) comprises for each sub-aperture:

(a1) applying different phase shifts to signals from different elements; and

- (a2) combining the signals.
4. (previously presented) The method of Claim 1 wherein (a) comprises partially beamforming demultiplexed signals.
5. (original) The method of Claim 1 wherein (b) comprises converting digital signals to analog signals.
6. (original) The method of Claim 1 wherein (b) comprises mixing the signals.
7. (cancelled)
8. (cancelled)
9. (currently amended) A transducer assembly for adapting signals from an ultrasound transducer for an ultrasound system, the assembly comprising:
 a transducer probe housing including the ultrasound transducer;
 a cable connected with the ultrasound transducer; and
 a connector housing at least partially enclosing a detachable connector and a signal processing device, the cable electrically connecting elements of the ultrasound transducer to the signal processing device, the cable external to the connector housing between the ultrasound transducer and the connector housing, and the detachable connector operable to connect and disconnect from the ultrasound system and operable to output signals responsive to the signal processing device and the ultrasound transducer;
 wherein the signal processing device comprises a partial beamformer;
 the transducer assembly configured for connection with the ultrasound system comprising a cart-based system, the connection being standardized for the cart-based system such that different transducer assemblies, including the transducer assembly, are connectable with the cart-based system for different examinations, the output signals of the transducer including signals in a plurality of channels for receive beamformation by the cart-based system.

10. (original) The assembly of Claim 9 wherein the ultrasound transducer comprises a multidimensional array of M elements and the detachable connector having a plurality N of outputs for the output signals, M being greater than N.
11. (original) The assembly of Claim 9 wherein the signal processing device comprises a digital-to-analog converter.
12. (original) The assembly of Claim 9 wherein the signal processing device comprises a mixer.
13. (cancelled)
14. (original) The assembly of Claim 9 wherein the signal processing device comprises a demultiplexer.
15. (original) The assembly of Claim 9 wherein the signal processing device is operable to convert the processed signals to a different form appropriate for the ultrasound system.
16. (currently amended) A method for adapting signals from an ultrasound transducer for an ultrasound system, the method comprising:
 - (a) partially beamforming signals from a plurality, M, of elements of the ultrasound transducer, the partial beamforming being performed in a transducer probe housing of a transducer assembly;
 - (b) converting the partially beamformed signals to a different form appropriate for the ultrasound system, the conversion being performed in a connector housing releasable from the ultrasound system, the connector housing part of the transducer assembly and connected to the transducer probe housing by a cable, the cable comprising at least sixty four coaxial cables external of the connector housing and a probe housing enclosing the elements; and

(c) outputting the converted, partially beamformed signals to a plurality, N, of beamformer channels of the ultrasound system, N being less than M, the ultrasound system comprising a cart-based system having a receive beamformer for receiving the partially beamformed signals on the beamformer channels.

17. (original) The method of Claim 16 wherein (a) comprises sub-array mixing and (b) comprises mixing to a frequency of the beamformer channels.

18. (previously presented) The method of Claim 16 further comprising:

(d) multiplexing the signals from the plurality of elements adjacent a transducer probe; and

(e) demultiplexing the signals within the connector housing;
wherein (b) comprises converting digital signals to analog signals.

19. (previously presented) The method of Claim 16 wherein (b) and (c) are performed with at least one signal processing device in the connector housing of the transducer assembly.

20. (original) The method of Claim 16 wherein (a) comprises partially beamforming from M signals to N signals, M being at least a multiple of two of N.

21. (original) The method of Claim 16 wherein (a) comprises partially beamforming for at least two simultaneously received beams.

22. (currently amended) A method for adapting signals from an ultrasound transducer for an ultrasound system, the method comprising:

(a) processing signals from a plurality of elements within a transducer housing; and
(b) further processing the signals sent from the transducer housing to a detachable connector within a detachable connector housing, the detachable connector housing spaced from the transducer housing by an external cable, the transducer housing, external cable, and detachable connector housing comprising a transducer assembly for connection to the ultrasound

system, the ultrasound system being cart-based and connectable to different transducer assemblies, including the transducer assembly, for receiving data in a standard format, the signals received in the detachable connector housing resulting from the processing of (a) resulting in signals incompatible with the standard format;

wherein (b) comprises one of:

- (b1) digital-to-analog converting of the signals; and
- (b2) mixing the signals.

23. (original) The method of Claim 22 wherein (b) comprises converting the processed signals of (a) to a different form appropriate for the ultrasound system.

24. (original) The method of Claim 22 wherein (a) comprises partially beamforming signals for each of a plurality of sub-apertures.

25. (cancelled)